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Additional Support for Two Subgenera of *Anemia* (Schizaeaceae) from Data for the Chloroplast Intergenic Spacer Region *trnL-F* and Morphology

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Abstract.—An analysis of morphological data for 13 species with 33 characters and molecular data for 14 species from the chloroplast DNA intergenic spacer region *trnL-F* indicates that species of the genus *Anemia* fall into two well-supported subgenera, *Anemiorrhiza* and *Anemia*. In addition, one species of the genus *Mohria* appears to belong within *Anemia*. Although further study is required, these data support the relationships suggested by a previous study of fossil and extant representatives of the genus.

The fern genus *Anemia* Sw. (Schizaeaceae) comprises about 120 species distributed mainly within the tropics and subtropics. Most of the species are found within the New World, with only about 12 in Africa and one in India. No monograph of the whole genus has been produced, although subgenus *Coptophyllum* (Mickel, 1962), subgenus *Anemiorrhiza* (Mickel, 1981), and spores of subgenera *Coptophyllum* and *Anemia* (Hill, 1977, 1979) have been studied. Since those works were produced, several new species have been described (Mickel, 1982, 1984, 1985), and a study of some of the Cretaceous fossils within the genus completed (Skog, 1992). In addition, the spores of the family Schizaeaceae have been described for modern and fossil representatives (van Konijnenburg-van Cittert, 1991, 1992). Other fossil representatives of the family have been described from Mesozoic and Cenozoic time periods and are summarized in Skog (2001) and Collinson (2001). There is clearly a need for a new revision of the genus and integration of all morphological data from fossil and living species with data from new molecular studies. We began a collaborative study in 1999. This paper reports some results indicating that the chloroplast sequence data are consistent with the fossil phylogeny reported earlier by Skog (1992).

The Schizaeaceae, considered to be a basal family of leptosporangiate ferns, includes the genera *Lygodium*, *Schizaea*, *Actinostachys*, *Mohria*, and *Anemia*. Fossil records of the family extend back to the Jurassic (Skog, 2001). The position of this family is not clear; it generally falls among several clades, including the Hymenophyllaceae, Cyatheaceae, Schizaeaceae, Matoniaceae, aquatic ferns, and more derived ferns (Raubeson & Stein, 1995; Pryer et al., 1995; Pryer et al., 2001). However, there is strong support from